



Building 911C
P.O. Box 5000
Upton, NY 11973-5000
Phone 631 344-4531
Fax 631 344-5954
hershcovitch@bnl.gov

Memo

DATE: November 30, 2001

TO: RHIC E-Coolers

FROM: *Ady Hershcovitch*

SUBJECT: **Minutes of the November 16, 2001 Meeting**

Present: Ilan Ben-Zvi, Michael Harrison, Jorg Kewisch, William MacKay, Stephen Peggs, Thomas Roser, Dejan Trbojevic, Dong Wang, Jie Wei.

Topics discussed: Simulation Codes.

Simulation Codes: Dong continued to report on the status of lattice calculations. So far simulations indicate that the issue of the merging beams needs to be resolved, since the low energy beam quality is very sensitive to the transverse magnetic fields. To overcome the difficulty, a septum magnet can be used for the high energy beam only. The low energy beam would go through a zero field region while the high energy beam would be deflected. Both beams will be merged in a small dipole.

In a 1 KG magnetic field applied for 0.5 meters, the 55 MeV electron beam will bend 15 degrees. However, even small fringe magnetic fields can result in a large deflection of the low energy electron beam. Merging the beams from a 3.5 cm separation can be done with a 2 degree bending over 1 meter.

Dong showed a sketch of the proposed septum magnets. A 2D calculation using POISSON indicates that magnetic would not leak of the iron core. Mike Harrison concurred that for a 1 KG magnetic field leakage would not be a problem.

Viewgraphs summarizing electron beam simulations with PARMELA for gun design and transport were shown. To cancel for increase in electron beam emittance in the solenoid, an axial magnetic field is needed at the electron gun. However, that field increases beam emittance. By adjusting various parameters, this emittance growth can be minimized. This issue remains to be resolved.

Finally, Dong showed the present status of gun design. A good feature is flexibility in area size of various surfaces that require cooling.